

ATTACHMENT C

NIH/NIDCR CONSENSUS DEVELOPMENT CONFERENCE (CDC) ON CARIES

SUBSECTION ON SALIVA AS A RISK FACTOR IN CARIES

EVIDENCE TABLE 1B.

AUTHOR	Y E A R	CARIES STATUS ASSESSMENTS				SALIVA STATUS ASSESSMENTS	
		Tooth/ Dentition Type	Scoring Method	Caries Location	Risk Indicators	Source of Saliva	Chief Salivary Physiology Described
			Detection Method	Caries Extent Caries Process Described	Risk Definition Clinical Decision Making		
Almstahl et al.	1999	Permanent	MFS Clinical examination	ND/NA ND/NA Filled lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva; Masticatory-stimulated whole saliva	General protective; Buffer capacity; pH
Bergman and Ericson	1986	Permanent	DFS Clinical examination; Bite-wing radiographs	ND/NA ND/NA Cavitated lesion	Salivary test (buffer capacity) Flow rate < 0.75 ml/min; Buffer capacity final pH <5.3 ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate; Buffer capacity; pH
Bhatia et al.	1986	Mixed; Permanent	DMFT Clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Antimicrobial; Levels of total IgA

Camling and Köhler	1987	Primary	dfs <hr/> Review of clinic records	ND/NA <hr/> ND/NA <hr/> Cavitated lesion	Clinical judgement based on dental evaluation <hr/> Caries experience negative, dfs=0; Caries experience positive, dfs>2 <hr/> ND/NA	Masticatory-stimulated whole saliva	General protective; Antimicrobial; Levels of total IgA and anti-S. mutans IgA, and anti-S. sanguis IgA; Binding activity of IgA to various S. mutans and S. sanguis serotypes
Chia et al.	1997	Permanent	DMFS <hr/> Clinical examination	ND/NA <hr/> ND/NA <hr/> Cavitated lesion	Clinical judgement based on dental evaluation; Salivary test (microbial counts) <hr/> Caries-free (CF), DMFS=0, low salivary microbial counts; Caries-active (CA), DMFS>1, high salivary microbial counts <hr/> ND/NA	Unstimulated whole saliva	General protective; Antimicrobial; Levels of total and anti-S. mutans IgA; Binding activity of IgA to various natural and synthetic S. mutans glucosyltransferase protein/peptides
Collin et al.	1998	Permanent	DMFT; DS; DS (root); FS; FS (root); WHO criteria (1987); Root caries criteria (DePaola et al. 1989); Data expressed as percent surfaces at risk <hr/> Clinical examination; Panoramic radiograph	Crown; root <hr/> ND/NA <hr/> Cavitated lesion; Root demineralization	Salivary test (flow rate) <hr/> Stimulated whole saliva ≤ 0.8 ml /min <hr/> ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate; Buffer capacity
Coogan and Motlekar	1996	Permanent	DMFT; WHO criteria (1987) <hr/> Clinical examination; Bite-wing radiographs	ND/NA <hr/> ND/NA <hr/> Cavitated lesion	Salivary and plaque test <hr/> Flow rate and amount of acids present in saliva and plaque <hr/> ND/NA	Masticatory-stimulated whole saliva (collected after glucose rinse)	General protective; Levels of organic acids

Dahlöf et al.	1989	Primary	dfs; dfs (proximal); ds; ds (proximal); ci (proximal; incipient); Koch Criteria (1967) Clinical examination; Bite-wing radiographs	Crown Caries defined as penetrating into dentin; initial caries lesions (ci) defined as confined to enamel Cavitated lesion; Enamel demineralization	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate; Buffer capacity
Dahlöf et al.	1997	Primary; Mixed; Permanent	DFS; Proximal caries measured by bite-wing radiographs Clinical examination; Bite-wing radiographs	ND/NA Proximal caries was recorded when radiolucency penetrated into dentin; Initial caries was defined as a radiolucency limited to enamel Cavitated lesion; Demineralization	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate; Buffer capacity
Demers et al.	1992	Primary	dmfs, WHO criteria (1979) Clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Stimulated whole saliva (authors did not specify mode of stimulation)	General protective; Buffer capacity
Dens et al.	1995	Primary; Mixed; Permanent	DMFT; dmft; WHO criteria (1977) Clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Antimicrobial; Levels of total IgA and IgG
Dens et al.	1996	Primary; Mixed; Permanent	DMFT; dmft; WHO criteria (1977) Clinical examination	ND/NA ND/NA Cavitated lesion	Salivary test (buffer capacity) ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Buffer capacity

Dodds et al.	1997	Permanent	DMFS; NIDCR criteria (1987) Clinical examination	ND/NA ND/NA ND/NA	Clinical judgment based on dental evaluation DMFS>5, caries-active (CA); DMFS=0, caries-free (CF) ND/NA	Gustatory-stimulated parotid saliva	General protective; Flow rate; pH; buffer capacity; Levels of Na, K, Cl, Ca, total protein, histatins, acidic PRPs, "fast" basic PRPs, basic PRPs, statherin, amylase, uric acid
Drake et al.	1994	Permanent	DFS; Radike criteria (1968) Clinical examination in the subject's home	Crown ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	ND/NA	Self-reported dry mouth
Duggal et al.	1991	Primary; Mixed; Permanent	DMFT; deft; WHO criteria (1977) Clinical examination	ND/NA ND/NA ND/NA	Clinical judgement based on dental evaluation DMFT/deft values of 3 groups: Low caries 0-2, Moderate caries 3-4, High caries ≥ 5 ND/NA	Unstimulated whole saliva	Concentrations of Zn, Cu, Fe, Mn, F
Faine et al.	1992	Permanent	DFS (root); Root caries index (RCS) according to criteria of Katz (1980) and Banting et al. (1980) Clinical examination	Root Cementum and dentin Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate; Buffer capacity
Fiehn et al.	1986	Permanent	DMFS Clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; α -amylase activity; Sucrase activity
Franco et al.	1996	Primary; Mixed; Permanent	DMFT; DMFS; dmft; dmfs; WHO criteria (1987) Clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva	General protective; Antimicrobial; Level of total salivary IgA

Fure	1998	Permanent	DFS (crown); DFS (root); DMFS (root); Incidence over 5 years expressed as a percent of surfaces at risk; Coronal caries (enamel caries) recorded according to WHO criteria (1987); Root surface caries recorded according to Banting et al. criteria (1980) Clinical examination	Crown, root ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva; Masticatory stimulated whole saliva	General protective; Flow rate, buffer capacity, pH
Furhoff et al.	1998	Permanent	DMFS; DS; WHO criteria (1987) Clinical examination; Bite-wing radiographs	ND/NA ND/NA ND/NA	ND/NA ND/NA ND/NA	Unstimulated whole saliva; Masticatory- stimulated whole saliva	General protective; Flow rate
Gavaldá et al	1999	Permanent	Carious, absent, and obturated teeth (CAO) index, WHO criteria (1987) Clinical examinations	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva; Gustatory- stimulated whole saliva; Gustatory- stimulated parotid saliva	General protective; Flow rate
Gregory et al.	1986	Permanent	DMFS Clinical examination; Radiographs	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated parotid saliva	General protective; Antimicrobial; Levels of anti-S. mutans IgA
Gregory et al.	1990	Permanent	DMFS Clinical examination, using transillumination	Crown ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva; Unstimulated parotid saliva	General protective; Antimicrobial; Levels of total and anti-S. mutans IgA, IgA1 and IgA2; Secretory component and J chain; Lactoferrin and lysozyme activity; Agglutination activity
Gregory et al.	1991	Permanent	DMFS; DS clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva; Unstimulated parotid saliva	Antimicrobial; Agglutination; Levels of IgA, IgM and IgG, total protein

Gregory et al	1995	Permanent	DMFS Clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva; Unstimulated parotid saliva	General protective; Antimicrobial; Levels of anti-S. mutans IgA
Grindefjord et al.	1995	Primary	dfs; ds Clinical examination	Crown ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva	General protective; Buffer capacity
Guivante-Nabet et al.	1999	Permanent	Caries activity index (CAR; Fejerskov et al., 1991), including sound, inactive, active, destroyed and filled surfaces; Root caries index (Katz et al., 1982) Clinical examination	Crown, root ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate; Buffer capacity
Hallett et al.	1995	Primary; Mixed; Permanent	DMFT; dmft; partial DMFS for mandibular anterior teeth; WHO criteria (1987) Clinical Examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva	General protective; Buffer capacity
Hellyer et al.	1989	Permanent	ND/NA ND/NA	Root ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	ND/NA	General protective; Flow rate; Buffer capacity
Hocini et al.	1993	Permanent	DMFT ND/NA	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole Saliva	General protective; Antimicrobial; Flow rate; Lactoferrin concentration; Levels of total IgA and IgA2, and anti-S. sobrinus IgA and anti-S. sanguis IgA; Binding avidity of IgA
Holbrook	1993	Primary; Mixed	DMFS; DMFT; dmfs; dmft; Holbrook et al. criteria (1989) Clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate; Buffer capacity; pH; Secretory status

Holbrook et al.	1993	Primary; Mixed	DMFS; DMFT; dmfs; dmft; Holbrook et al. criteria (1989) Clinical examinations	ND/NA ND/NA Cavitated lesion	Clinical judgement based on dental evaluation; Salivary tests (flow rate, buffer capacity, microbial counts) Baseline caries score ≥ 4 dmfs, ≥ 3 new carious lesions; S. mutans count $\geq 10^5$ cfu/ml, lactobacilli count $\geq 10^4$ cfu/ml, pH < 7 , stimulated flow rate < 1 ml/min, buffer capacity $< \text{pH } 5.5$ ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate; Buffer capacity; pH; Secretory status
Johansson et al.	1992	Primary; Mixed; Permanent	DMFS; dmfs Clinical examination, Bite-wing radiographs	Crown Clinical cavity or explorer stick; Radiographic lesion exceeding two thirds of the enamel Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva; Masticatory-stimulate whole saliva	General protective; Flow rate; Buffer capacity; pH
Kirstilä et al.	1994	Primary; Mixed; Permanent	DMFT; DMFS; dmft; dmfs; WHO criteria (1977) Clinical examination; Bite-wing radiographs	ND/NA DS was recorded if the lesion was detectably softened; Approximal enamel lesions which were visible only radiographically were included Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective: Antimicrobial; Flow rate; Buffer capacity; Levels of lysozyme, lactoferrin, total peroxidase activity, myeloperoxidase, hypothiocyanite, thiocyanate, agglutination rate, and total and specific anti- S. mutans IgA, IgG and IgM

Kirstilä et al.	1998	Primary; Mixed; Permanent	DMFT; DMFS; DS; dmft; dmfs; ds; WHO criteria (1987); (fissure sealants and third molars were not included in the DMFS index); White spots were recorded as clinically active initial caries lesions in enamel and expressed as C ₁ S Clinical examination; Bite-wing radiographs	ND/NA DS was recorded if the lesion was detectably softened Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory- stimulated whole saliva	General protective; Antimicrobial; Flow rate; Buffer capacity; Levels of lysozyme, lactoferrin, total peroxidase activity, hypothiocyanite, thiocyanate, agglutination rate, and total and specific anti- S. mutans IgA and IgG
Laurikainen and Kuusisto	1998	Permanent	DMFT; WHO criteria (1987) Clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory- stimulated whole saliva	General protective; Flow rate; pH
Lenander- Lumikari et al.	1998	Permanent	DMFT; WHO criteria (1987) Clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory- stimulated whole saliva	General protective; Levels of total protein, lactoferrin, myeloperoxidase, salivary peroxidase, lysozyme, thiocyanate, calcium, sodium and potassium
Lowe et al.	1997	Mixed; Permanent	DMFT; WHO criteria (1987) Clinical examination	ND/NA ND/NA Cavitated lesion	Clinical judgement based on dental evaluation Caries-free (DMFT=0); Caries-prone (DMFT \geq 3) ND/NA	Unstimulated whole saliva; two series of timed collections 2 weeks apart; saliva collected before and up to 9 min. after glucose rinse	General protective; Oral glucose clearance rate
Lundgren et al.	1997	Permanent	DMFS; DFS; Root caries index (RCI; Katz criteria, 1984) Clinical examination	Crown; Root ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory- stimulated whole saliva	General protective; Flow rate; Buffer capacity; Oral glucose clearance rate
MacEntee et al.	1993	Permanent	DFS; DS; FS Clinical examination	Crown; Root ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Stimulated whole saliva (as per Mandel and Wotman, 1976)	General protective; Flow rate

Meurman et al.	1997	Permanent	DMF Clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate; Buffer capacity
Milosevic and Slade	1989	Permanent	DMFS Clinical examination, Bite-wing radiographs	ND/NA enamel lesions were excluded from DMFS scores Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva	General protective; Buffer capacity
Najera et al.	1997	Permanent	DMFS Clinical examination; Radiographic examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva (for pH measurement); Gustatory-stimulated parotid saliva (for flow rate measurement)	General protective; Flow rate; pH
Närhi et al.	1996	Permanent	DFS (crown); DFS (root) using DePaola et al. criteria (1989) and Root Caries Index (RCI; Katz, 1980) Clinical examination	Crown; Root Incipient lesions and secondary caries were also recorded Cavitated lesion; Demineralization	ND/NA ND/NA ND/NA	Unstimulated whole saliva; Masticatory-stimulated whole saliva	General protective; Flow rate; Buffer capacity
Närhi et al.	1999	Permanent	DFS (crown); DFS (root) using DePaola et al. criteria (1989) and Root Caries Index (RCI; Katz, 1980) Clinical examination	Crown; Root Incipient lesions and secondary caries were also recorded Cavitated lesion; Demineralization	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate; Buffer capacity

Näsman et al.	1994	Primary; Mixed; Permanent	DFS; DS; CI (initial caries); dfs, ds, ci; Proximal caries measured by bite-wing radiographs; DFS/dfs using Koch criteria (1967) Clinical examination; Bite-wing radiographs	ND/NA Proximal caries was recorded when radiolucency penetrated into dentin; initial caries was defined as a radiolucency limited to enamel Cavitated lesion; Demineralization	ND/NA ND/NA ND/NA	Masticatory- stimulated whole saliva	General protective; Flow rate; Buffer capacity
Naspitz et al.	1999	Primary	dmfs Clinical examinations	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva for immunologic analysis; Masticatory- stimulated whole saliva for microbial analysis	General protective; Antimicrobial; Levels of anti-S. mutans IgA, IgM, and IgG; Total salivary levels of sIgA
O'Sullivan and Curzon	2000	Primary; Mixed; Permanent	DFS, dfs Clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva; Masticatory- stimulated whole saliva	General protective; Flow rate; Buffer capacity, pH
Öhrn et al.	1999	Permanent	DMFS; DFS; DS; WHO criteria (1987) Clinical examination, Radiographic examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva; Masticatory- stimulated whole saliva	General protective; Flow rate; Buffer capacity; pH
Pajari	1988	Primary; Mixed; Permanent	DMFT; DMFS; dmft; dmfs; WHO criteria (1977) Clinical examination; Radiographic examination	ND/NA Definite cavity extending into the dentin or secondary decay Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva	General protective; Antimicrobial; Flow rate; pH; Levels of lysozyme and total IgA, IgG and IgM

Pandey et al.	1990	Primary; Mixed; Permanent	DMFS; dfs: WHO criteria (1971) Clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva (however, subjects used wax without chewing it)	General protective; Phosphorus concentration; Alkaline phosphatase activity
Parkash et al.	1994	Primary; Mixed; Permanent	ND/NA Clinical examination	ND/NA Enamel and dentin Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Antimicrobial; Levels of total and anti-S. mutans IgA, IgG and IgM
Pedersen et al.	1999	Permanent	DMFT, DMFS Clinical examinations	ND/NA ND/NA ND/NA	ND/NA ND/NA ND/NA	Unstimulated whole saliva; Masticatory-stimulated whole saliva; Gustatory-stimulated parotid saliva	General protective; Flow rate; Levels of Na, K, statherin and total acidic proline-rich proteins (aPRPs)
Pienihäkkinen	1987	Primary; Mixed; Permanent	DMFS; ΔDMFS; WHO criteria (1979); Incipient caries (INC) defined as a lesion without clinically detectable loss of substance: when INC was used as a predictor, the presence of ≥1 lesions on buccal or lingual tooth surfaces were regarded as a positive finding Clinical examination	ND/NA Incipient (INC) lesions on non-occlusal surfaces were recorded Cavitated lesion; Demineralization	Salivary tests (salivary microbial counts and buffer capacity); INC lesions Buffer capacity pH ≤5.0 ND/NA	Masticatory-stimulated whole saliva	General protective; Buffer capacity
Pienihäkkinen et al.	1987	Primary; Mixed; Permanent	DMFS; ΔDMFS Clinical examination	ND/NA ND/NA Cavitated lesion	Clinical judgement based on dental evaluation; Salivary tests (buffer capacity) High risk=ΔDMFS>3, Buffer capacity pH ≤5.0 ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate; Buffer capacity

Pohjamo et al.	1988	Permanent	DS; FS; Intact surfaces (IS) Clinical examinations; Bite-wing radiographs	ND/NA Only obvious lesions extending into dentin were recorded Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate; Buffer capacity
Raitio et al.	1996 a	Permanent	DFS; WHO criteria (1979); White spot lesions on buccal and lingual surfaces Clinical examination	Crown Enamel, dentin Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate; Buffer capacity
Raitio et al.	1996 b	Mixed; Permanent	DFS, Δ DFS, DS, FS, WHO criteria (1987), White-spot lesions Clinical examination	Crown Enamel lesions were excluded from DFS score Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate, Buffer capacity; Microbial nutrition activity (sucrase activity)
Ravald and List	1998	Permanent	DS (crown); FS (crown); FS (root); Active and inactive root caries (Nyvad and Fejerskov, 1982); Root caries index (RCI; Katz, 1980) Clinical examination; Radiographs when needed	Crown; root Approximal caries recorded only if radiographic lesion penetrated >2/3 enamel; Active root caries: soft and yellowish or light brownish color; Inactive root caries: hard and brown to black lesion color Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva; Masticatory-stimulated whole saliva	General protective; Flow rate

Ravald et al.	1993	Permanent	Root caries according to Hix and O'Leary (1976) as modified according to Nyvad & Fejerskov (1986); DFS (root); DFS% (root, Ravald & Hamp criteria, 1981); Filled surfaces included both restorations confined to the root and coronal restoration extending onto the roof Clinical examination; Full-mouth radiographs	Root Active root caries defined as soft when probed; inactive root caries defined as hard when probed; Both active and inactive recorded regardless of involvement of adjacent enamel or existing restoration Cavitated lesion	ND/NA individuals were subgrouped based on DFS% ≤ 5 vs. > 5 during years 9-12 ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate, pH, Oral sugar clearance time
Riviere and Papagiannoulis	1987	Primary; Mixed; Permanent	DFS Clinical examination; Radiographs	ND/NA ND/NA Cavitated lesion	Clinical judgement based on dental evaluation Caries-free (CF) DFS=0; Caries-prone (CP) DFS ≥ 1 ND/NA	Unstimulated whole saliva ("not every child donated enough saliva to test every variable")	General protective, Antimicrobial; Levels of total IgA, IgG and IgM; Binding activity of IgA, IgG and IgM to various S. mutans serotypes
Rose et al.	1993	Primary; Mixed; Permanent	DMFS Clinical examination	ND/NA ND/NA Cavitated lesion	Clinical judgement based on dental evaluation Caries risk defined as Caries susceptible (DMFS >5) and Caries resistant (DMFS ≤ 1) ND/NA	Whole saliva (presumably unstimulated)	General protective; Antimicrobial; Levels of anti-S. mutans IgA
Rose et al.	1994	Primary; Mixed; Permanent	DMFS Clinical examination	ND/NA ND/NA Cavitated lesion	Clinical judgement based on dental evaluation Caries-resistant (CR) DMFS ≤ 1 ; Caries-susceptible (CS) DMFS > 5 ND/NA	Unstimulated whole saliva; Unstimulated parotid saliva	General protective, Antimicrobial; Levels of total and anti-S. mutans IgA, IgA1 and IgA2

Ruhl et al.	2000	ND/NA	ND/NA ND/NA	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva	General protective; Protein concentrations; Electrophoretic pattern of protein and glycoprotein
Ryberg et al.	1987	Mixed, Permanent	DFS, FS, initial caries Clinical examination, 2 bite-wing radiographs	ND/NA initial caries did not penetrate into dentin Cavitated lesion; Incipient lesion	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva; Gustatory-stimulated parotid saliva	General protective; Flow rate, pH, buffer capacity, sodium, potassium, calcium, total protein, amylase, hexosamine, lysozyme, salivary peroxidase, bacteria-aggregating glycoproteins (BAGP), sIgA
Ryberg et al.	1991	Mixed, Permanent	DFS, FS, initial caries Clinical examination, Bite-wing radiographs	ND/NA initial caries did not penetrate into dentin Cavitated lesion; Incipient lesion	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva; Gustatory-stimulated parotid saliva	General protective; Flow rate, pH, buffer capacity, sodium, potassium, calcium, total protein, amylase, hexosamine, lysozyme, salivary peroxidase, bacteria-aggregating glycoproteins (BAGP), sIgA
Rytömaa et al.	1998	Permanent	DMFS; WHO criteria (1987); both cavitation (DS) and pre-cavitation (DSini) were recorded for various coronal surfaces Clinical examination; Bitewing radiographs	Crown ND/NA Cavitated lesion; Demineralization	ND/NA ND/NA ND/NA	Unstimulated whole saliva; Stimulated whole saliva (presumably masticatory stimulated)	General protective; Flow rate; Buffer capacity
Seemann and Kage	1997	Primary; Mixed; Permanent	DMFS; dmfs Clinical examination	ND/NA ND/NA Cavitated lesion	Clinical judgement based on dental evaluation Caries risk defined as Caries positive (DMFT \geq 4) and Caries negative (DMFT+dmft=0) ND/NA	ND/NA	General protective; Antimicrobial; Levels of total and anti-S. mutans IgA; Antiadhesive activity of salivary glyconjugates
Sepet et al.	1998	Primary; Mixed; Permanent	DMFS; DMF; dfs; df; Performed Treatment Index (PTI); Required Treatment Index (RTI) Clinical examination	ND/NA ND/NA ND/NA	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate; pH

Sgan-Cohen et al.	1992	Primary, Mixed, Permanent	DMFT, WHO criteria (1987) Clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva	General protective; pH, flow rate, bacterial counts
Shapira et al.	1991	Permanent	DMFS; DS; FS; WHO criteria (1977) Clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva	General protective; pH (using standard pH paper)
Siamopoulou et al.	1989	Primary; Mixed; Permanent	DMF Index Clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Gustatory-stimulated parotid saliva	General protective; Antimicrobial; Flow rate; Levels of calcium, phosphorous, potassium, chloride, sodium, urea, lysozyme, α -amylase and total IgA, IgG and IgM
Siamopoulou-Mavridou et al.	1992	Mixed	DMFT; WHO criteria (1977) Clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Gustatory-stimulated parotid saliva	General protective; Flow rate; functions of biochemical composition of saliva flow rate, the levels of Calcium, Inorganic phosphorus, Potassium, Sodium, Urea, Lysozyme, IgA; IgG; IgM
Söderholm and Birkhed	1988	Permanent	DMFS; Δ DFS Clinical examination; Bite-wing radiographs	Crown, root Primary and secondary caries were recorded; incipient caries were excluded Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate Buffer capacity
Soto-Rojas et al.	1998	Permanent	DS; WHO criteria (1987) Clinical examination	Occlusal; cervical ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	ND/NA	Self-reported oral dryness (visual analog scale, VAS 1-10)
Stabholz et al.	1991	Mixed, Permanent	DMFS; DS; FS; WHO criteria (1977) Clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva	General protective; pH (using standard pH paper)

Stiefel et al.	1990	Permanent	DMFS; NIDCR criteria (1987) Clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva; a subgroup of 22 chronic mental illness subjects (CMI) and 15 control subjects were used for duplicate collections on two separate days using both expectoration and cotton-roll techniques	General protective; Weight and volume of saliva collected (however, no data on weight or volume collected per minute raises questions for comparing the two groups)
Stiefel et al.	1993	Permanent	DMFS; NIDCR criteria (1987) Clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva	General protective; volume of saliva collected over 5 min
Sullivan	1990	Primary	dmfs using WHO criteria (1987); surface demineralization; approximal caries defined as radiolucent areas that could not be related to normal anatomy or hypoplasia Clinical examination; Bite-wing radiographs	ND/NA ND//NA Cavitated lesion; Demineralization	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate; Buffer capacity
Sullivan and Schröder	1989	Primary	dmfs using WHO criteria (1987); surface demineralization; approximal caries defined as radiolucent areas that could not be related to normal anatomy or hypoplasia Clinical examination; Bite-wing radiographs	ND/NA ND//NA Cavitated lesion; Demineralization	ND/NA ND/NA ND/NA	Stimulated whole saliva (presumably masticatory-stimulated); Buffer capacity data missing for one child age 5 y	General protective; Flow rate; Buffer capacity
Sundh et al.	1993	Permanent	DMFT; DMFS; DS Clinical examination, Posterior bite-wing radiographs	ND/NA Both incipient and microscopic caries Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated whole saliva; Masticatory-stimulated whole saliva	General protective; antimicrobial; Flow rate, total protein peroxidase, thiocyanate, sIgA, lactoferrin, lysozyme and bacterial aggregation glycoprotein (BAGP)

Sundin et al.	1992	Permanent	DFS Radiographic evaluation (posterior bite-wings)	ND/NA Caries was defined as radiolucent areas that could not be related to normal anatomy Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate; Oral sugar clearance time
Swanljung et al.	1992	Mixed; Permanent	DMFS; DMF; No. initial caries and white spot lesions; WHO criteria (1977) Clinical examination with fiber optic illumination; Bite-wing radiographs	ND/NA ND/NA Cavitated lesion; Demineralization	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate; glucose concentration; buffer capacity; pH
Tenovuo et al.	1986	Permanent	DMFS; DS; FS (surfaces that were both decayed and filled were counted as decayed surfaces) Clinical examination; Bite-wing radiographs; panoramic radiographs	ND/NA only cavities extending to the dentin were recorded in DMFS index Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective Flow rate; glucose concentration; buffer capacity; pH;
Touyz et al.	1993	Permanent	DMFT Clinical examination	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Presumably masticatory-stimulated whole saliva (authors did not specify source)	General protective; Flow rate, pH
Tukia-Kulmala and Tenovuo	1993	Permanent	DMFS Clinical examination	ND/NA Only cavities extending into dentin were recorded Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate; Buffer capacity
Twetman et al.	1989	Primary; Mixed; Permanent	DFS of permanent teeth Clinical examination (data on caries experience obtained from dental cards)	ND/NA ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Masticatory-stimulated whole saliva	General protective; Flow rate; Buffer capacity; Total protein; Glucose concentration

VanWuyckh uyse et al.	1995	Permanent	DMFS <hr/> Clinical examination	ND/NA <hr/> ND/NA <hr/> Cavitated lesion	ND/NA <hr/> ND/NA <hr/> ND/NA	Gustatory- stimulated parotid saliva	General protective; Concentrations of 20 free amino acids, in particular arginine and lysine
Vehkalahti et al.	1996	Permanent	DFMT (at baseline), Δ DFS; WHO criteria (1987) <hr/> Clinical examination	ND/NA <hr/> Lesions clearly reaching dentin were recorded as caries <hr/> Cavitated lesion	Clinical judgement based on dental evaluation; Salivary tests (buffer capacity, salivary microbial counts) <hr/> High risk defined as Δ DFS>0; Flow rate of unstimulated saliva <0.2 ml/min, flow rate of stimulated whole saliva <1.0 ml/min; Buffering capacity final pH <4.5, MS score of 2 or 3 ($\leq 10^5$ CFU/ml) and LB score of 5 or 6 ($\leq 10^5$ CFU/ml) <hr/> ND/NA	Unstimulated whole saliva; Masticatory- stimulated whole saliva	General protective; Flow rate; Buffer capacity
Vranic et al.	1991	Permanent	ND/NA <hr/> Clinical examination	ND/NA <hr/> ND/NA <hr/> Cavitated lesion	ND/NA <hr/> ND/NA <hr/> ND/NA	Unstimulated whole saliva	General protective; Concentrations of approx. 20 free amino acids
Wiktorsson et al.	1992	Permanent	Caries activity was registered clinically in three levels: Caries inactive, Caries active, High caries active <hr/> Clinical examination	ND/NA <hr/> into enamel and/or dentin; "active" or "arrested" <hr/> Cavitated lesion	Clinical judgement based on dental evaluation <hr/> Caries-inactive (no active caries); Caries- active (both active and arrested caries); High caries-active (all carious lesions active); Active and High active groups were combined in the data analyses <hr/> ND/NA	Stimulated whole saliva (no specific mention of whether masticatory or gustatory stimulation)	General protective; Flow rate; Buffer capacity

Wöltgens et al.	1992 a	Primary; Mixed; Permanent	DMFS; White spot lesions described according to: none; initiation; regression; stabilization; and progression into a cavitated lesion Clinical examination	ND/NA ND/NA Cavitated lesion; Demineralization ; Remineralization	Salivary test (Snyder test for lactobacilli – mediated acidogenic saliva) ND/NA ND/NA	Unstimulated whole saliva; Masticatory-stimulated whole saliva	General protection; Flow rate; Buffer capacity; pH; viscosity, Snyder test; concentrations of Mg, Ca and P
Wöltgens et al.	1992 b	Primary; Mixed; Permanent	DMFS; Interproximal radiographic lesions described according to: none; enamel outer half; enamel inner half; into dentin; and filling Clinical examination; Bite-wing radiographs	Crown into enamel and/or dentin Cavitated lesion; Demineralization	Salivary test (Snyder test for lactobacilli – mediated acidogenic saliva) ND/NA ND/NA	Unstimulated whole saliva; Masticatory-stimulated whole saliva	General protection; Flow rate; Buffer capacity; pH; viscosity, Snyder test; Concentrations of Mg, Ca and P
Wood and Lee	1988	Permanent	DMFS; No. teeth with carious lesions Clinical examination; full mouth radiographs	ND/NA ND/NA Cavitated lesion	Clinical judgement based on dental evaluation ND/NA ND/NA	Unstimulated whole saliva	General Protective; Visual grading: (1)= clinically dry (2)=not dry, but minimal (3)=normal (1)+(2)=xerostomia
Younger et al.	1998	Permanent	DMFS (crown); DS (root); FS (root); NIDCR criteria (1991) Clinical examination	Crown; Root ND/NA Cavitated lesion	ND/NA ND/NA ND/NA	Unstimulated parotid saliva; Unstimulated combined sublingual/submandibular saliva; Gustatory-stimulated parotid saliva; Gustatory-stimulated combined sublingual/submandibular saliva; Masticatory-stimulated whole saliva	General protective; Flow rate
Zimmer et al.	1997	Permanent	D _{3,4} MFS Clinical examination	ND/NA ND/NA Cavitated lesion	Clinical judgement based on dental evaluation High caries risk defined as D _{3,4} MFS >3 for 2-year caries increment ND/NA	ND/NA	General Protective; Buffer capacity

